3. Operation

Factory Calibrations

The instrument is delivered in its standard factory set point form unless a custom factory calibration was specified. The standard factory setting is mid-range between no flow and full flow. See Figure 3-1.

If the order included custom factory calibration and alarm set point, keep all settings unchanged. The instrument is ready for service without changes.

Field Calibrations for Flow Applications

If the factory calibrations were not ordered then follow one of the procedures below based on the particular instrument purchased. If precise measurement is desired, FCI recommends that a FM71 Monitor/Calibrator be used. Then the precise measurement of the signal voltage versus flow rate can be calculated for the alarm set points.

Alarm Set Point Adjustments By Observation or By Measurement

Alarm set points can be adjusted by observation or by precision measurements. The following procedure is adjustment by observation. If adjustment by measurement is desired, obtain an FCI FM71 Calibrator/monitor and follow the instructions found in the FM71 manual.

Alarm 1 Set Point Procedure for 5181 Control Circuit

1. Flow the pipeline at the desired rate of flow.
2. Apply power to the instrument and allow 15 minutes for the sensing element to become active and stabilize.
3. Locate the potentiometer (R5) and the red LED on the control circuit. (See Figure 3-2.)
4. Choose A or B.

A. Detecting No Flow or Decreasing Flow Rate

If the LED is off, turn the potentiometer clockwise until the LED turns on. If the LED is on, turn the potentiometer counterclockwise until the LED turns off, then turn the potentiometer clockwise until the LED just turns on. With the LED on, turn the potentiometer slowly counterclockwise until the LED just turns off. Turn the potentiometer one-half turn past the point at which the LED just turns off. Be aware that the potentiometer may have up to one quarter turn of hysteresis. If the mark is overshot, the procedure should be repeated. (See Figure 3-1.)

B. Detecting Maximum Flow or Increasing Flow Rate

If the LED is on, turn the potentiometer counterclockwise until the LED turns off. If the LED is off, turn the potentiometer clockwise until the LED turns on, then turn the potentiometer counter clockwise until the LED just turns off. With the LED off, turn the potentiometer slowly, clockwise until the LED just turns on. Turn the potentiometer one-half turn past the point at which the LED just turns on. Be aware that the potentiometer may have up to one quarter turn of hysteresis. If the mark is overshot, the procedure should be repeated. (See Figure 3-1.)

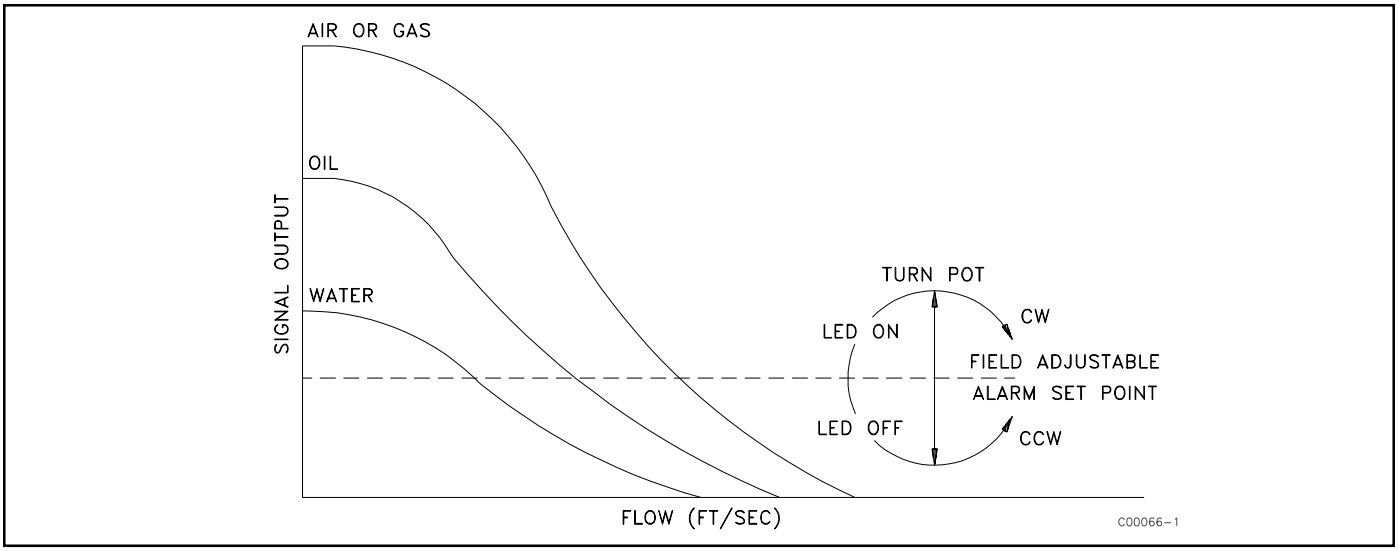

Figure 3-1. Setting Alarm Switch Points

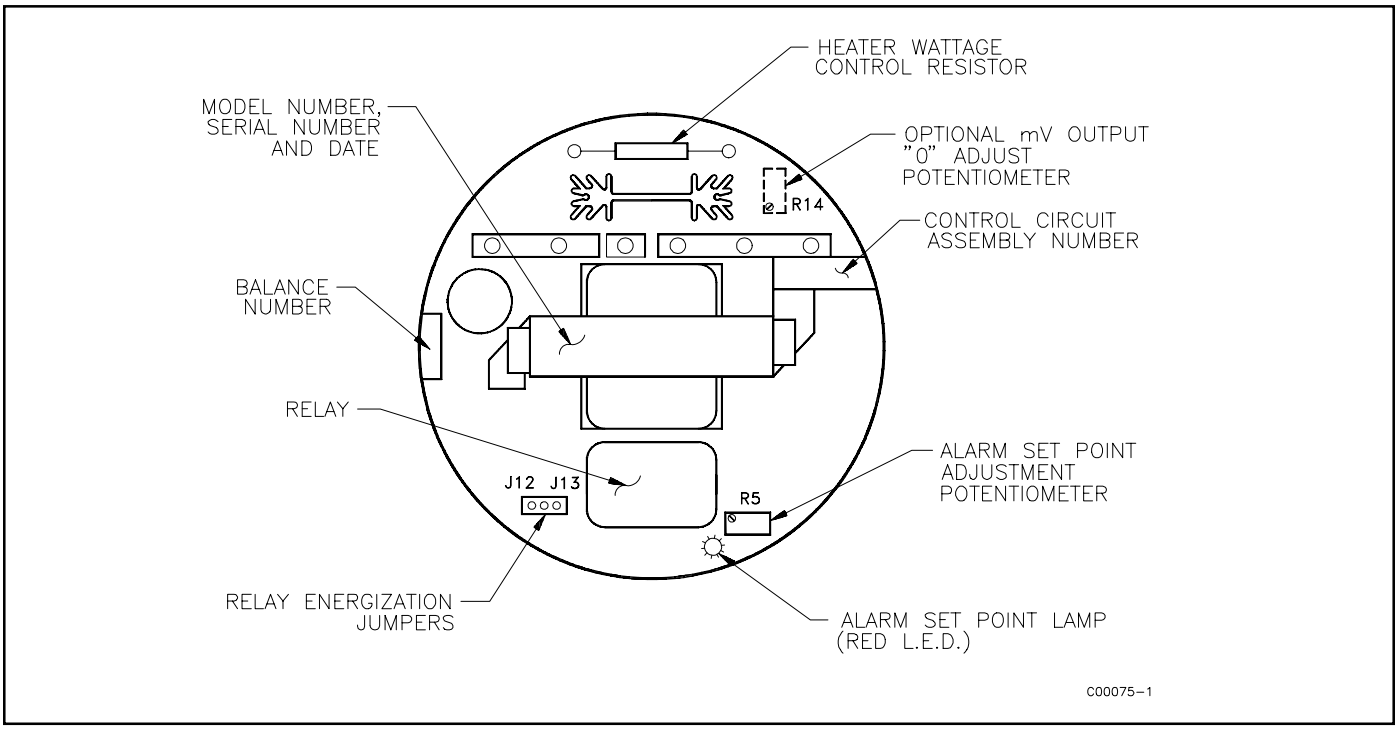

Figure 3-2. Control Circuit 5181 Outline Drawing

Creating a Calibration Curve Using an FM71 Calibrator

1. Apply power to the instrument and establish a constant flow rate in the pipe for the first data point to be taken. Let the instrument stabilize for 10 minutes.
2. Attach an FM71 meter to the control circuit. Dial in the balance number found near the edge of the control circuit. The read out /calib. switch should be in the read out position. Record the flow rate versus the meter readout.
3. Repeat steps 1 and 2 at different flow rates. Record enough flow points to be able to make a millivolt versus flow curve.

To set a switch point, use the instructions that come in the FM71 manual.